

REMARKS

Claims 1-35 and 38-75 are pending, although claims 15-35 and 38-75 have been withdrawn from consideration as drawn to non-elected subject matter. The claims under examination are therefore claims 1-14.

I. Rejections Under 35 U.S.C. 102 and/or 103

A. Walker et al.

Claims 1-6 and 8-14 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as allegedly obvious in view of U.S. Patent No. 4,697,001 to Walker et al. (hereinafter "Walker"). The rejection is respectfully traversed.

Prior to discussing the relative merits of the Patent Office's rejection, Applicants point out that unpatentability based on "anticipation" type rejection under 35 USC 102(b) requires that the invention is not in fact new. See *Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 299, 302, 36 USPQ2d 1101, 1103 (Fed. Cir. 1995) ("lack of novelty (often called 'anticipation') requires that the same invention, including each element and limitation of the claims, was known or used by others before it was invented by the patentee"). Anticipation requires that a *single reference* [emphasis added] describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art. See, *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990).

The Patent Office alleges that Walker discloses each and every feature of the present claims. Specifically, the Patent Office alleges that process of preparing the oxidant as suggested by Walker and set forth in step A and B of Walkers Examples I-VII

reads on the process for preparing an oxidant wherein a metal salt (e.g. $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$) of an organic acid or inorganic acid having organic radicals is treated with an ion exchanger (e.g. NaOH) before contacting with precursors, such as pyrrole. Moreover, the Patent Office alleges that Walker specifically or inherently meets each of the presently claimed features and, therefore, anticipates the present claim. Alternatively, the Patent Office alleges if Walker is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to arrive at the claimed process, any minor modification necessary to meet the claimed limitations, would have been within the purview of the skilled artisan. Applicants respectfully disagree with the allegations by the Patent Office.

The principle of "inherency," in the law of anticipation, requires that any information missing from the reference would nonetheless be known to be present in the subject matter of the reference, when viewed by persons experienced in the field of the invention. However, "anticipation by inherent disclosure is appropriate only when the reference discloses prior art that must necessarily include the unstated limitation, [or the reference] cannot inherently anticipate the claims." *Transclean Corp. v. Bridgewood Servs., Inc.*, 290 F.3d 1364, 1373 [62 USPQ2d 1865] (Fed. Cir. 2002); *Hitzeman v. Rutter*, 243 F.3d 1345, 1355 [58 USPQ2d 1161] (Fed. Cir. 2001) ("consistent with the law of anticipation, an inherent property must necessarily be present in the invention described by the count, and it must be so recognized by persons of ordinary skill in the art"); *In re Robertson*, 169 F.3d 743, 745 [49 USPQ2d 1949] (Fed. Cir. 1999) (that a feature in the prior art reference "could" operate as claimed does not establish inherency).

Thus when a claim limitation is not explicitly set forth in a reference, evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co.*, 948 F.2d at 1268. It is not sufficient if a material element or limitation is "merely probably or possibly present" in the prior art. *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295 [63 USPQ2d 1597] (Fed. Cir. 2002). See also, *W.L. Gore v. Garlock, Inc.*, 721 F.2d at 1554 (Fed. Cir. 1983) (anticipation "cannot be predicated on mere conjecture respecting the characteristics of products that might result from the practice of processes disclosed in references"); *In re Oelrich*, 666 F.2d 578, 581 [212 USPQ 323] (CCPA 1982) (to anticipate, the asserted inherent function must be present in the prior art).

The undersigned reminds the Examiner that the determination of obviousness under §103(a) requires consideration of the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1 [148 USPQ 459] (1966): (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of nonobviousness. *McNeil-PPC, Inc. v. L. Perrigo Co.*, 337 F.3d 1362, 1368, 67 USPQ2d 1649, 1653 (Fed. Cir. 2003). There must be some suggestion, teaching, or motivation arising from what the prior art would have taught a person of ordinary skill in the field of the invention to make the proposed changes to the reference. *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). But see also *KSR International Co. v. Teleflex Inc.*, 82 USPQ2D 1385 (U.S. 2007).

A methodology for the analysis of obviousness was set out in *In re Kotzab*, 217

F.3d 1365, 1369-70, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000) A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher."

It must also be shown that one having ordinary skill in the art would reasonably have expected any proposed changes to a prior art reference would have been successful. *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1207, 18 USPQ2d 1016, 1022 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988); *In re Clinton*, 527 F.2d 1226, 1228, 188 USPQ 365, 367 (CCPA 1976). "Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure." *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988).

Independent claim 1 requires that a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger to prepare the metal salt as an oxidant before the metal salt is brought into contact with precursors as an oxidant for the preparation of the conductive polymers.

In contrast, Walker teaches that (a) oxidation of pyrrole is carried out in the presence of a strong oxidant which include the cations, such as, Fe^{3+} , (b) dopant anions (i.e., non-nucleophilic anions) for the pyrrol polymer are employed in conjunction with

the oxidant, and (c) the anions are organic anions, such as alkyl or aryl sulfonates (see col. 2, lines 45-60). Walker also teaches that a convenient manner for providing both the strong oxidant (Fe^{3+} cations) and dopant anion (organic anion) is in the form of salt incorporating both the oxidant cation (Fe^{3+} cations) and the dopant anion (organic anion) as oxidant counterion (see col. 3, lines 5-8).

Examples 1-4 of Walker teach the salt, which includes both the oxidant cation (Fe^{3+} cations) and the dopant anion (organic anion), is formed by mixing ferric hydroxide and the dopant or organic anion (such as, ethylbenzenesulfonic, perfluorooctylsulfonic, perfluorobutyric and trifluoroacetic acids for Examples 1-4, respectively). However, it is not Walker's resulting salt (having the oxidant cation and organic anion) which is mixed with the alleged ion exchanger, NaOH. Instead, it is $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ which is mixed with the alleged ion exchanger to prepare ferric hydroxide which is subsequently mixed the dopant or organic anion to produce the resulting salt.

Mixing $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ with NaOH according to Walker does not teach or suggest a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger as recited in present claim 1. Thus, Walker does not disclose, teach or suggest that a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger to prepare the metal salt as an oxidant before the metal salt is brought into contact with precursors as an oxidant for the preparation of the conductive polymers as required by the present claims.

Because these features of independent claims 1 and 12-14 are neither taught nor suggested by Walker, Walker cannot anticipate, and would not have rendered obvious, the features specifically defined in claim 1 and 12-14 and their dependent claims.

For at least these reasons, claims 1-6 and 8-14 are patentably distinct from and/or non-obvious in view of Walker. Reconsideration and withdrawal of the rejections of the claims under 35 U.S.C. 102(b)/103(a) are respectfully requested.

B. Kirchmeyer et al. or Hsu in view of Nishiyama et al.

Claims 1-14 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent Publication No. 2002/0077450 to Kirchmeyer et al. (hereinafter "Kirchmeyer") or U.S. Patent No. 7,112,368 to Hsu in view of U.S. Patent No. 5,886,046 to Nishiyama et al. (hereinafter "Nishiyama"). This rejection is respectfully traversed.

The Patent Office acknowledges that neither Kirchmeyer nor Hsu teaches or suggests the oxidant solution being treated with an ion exchanger before the solution is mixed with precursors for the preparation of conductive polymers, i.e., polythiophenes (see page 6 of the present Office Action). The Patent Office introduces Nishiyama as allegedly remedying the deficiencies of Kirchmeyer and/or Hsu by teaching (I) a method for preparing electroconductive polymers such as polythiophene derivative polymers wherein an oxidizing agent solution is prepared before the solution is contacted with monomer (precursor) solution to form the electroconductive polymer, and (II) the oxidizing agent solution may include an oxidant such as iron (III) salt dissolved in a non-protonic organic solvent such as acetonitrile. The Patent Office alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to split the one-step preparation of Kirchmeyer or Hsu wherein the oxidant is added to the precursor solution during the reaction as suggest by Kirchmeyer or Hsu into two-steps as suggested by Nishiyama wherein the oxidant is prepared in a solution before

contacting with the oxidant solution with the precursor solution as suggested by Nishiyama to produce polythiophene polymer. Applicants respectfully disagree with the Patent Office's allegations.

Contrary to the Patent Office's allegations, the present claims do not require that an oxidant solution is treated with an ion exchanger before the solution is mixed with precursors for the preparation of conductive polymer. Instead, claim 1 requires that a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger to prepare the metal salt as an oxidant before the metal salt is brought into contact with precursors as an oxidant for the preparation of the conductive polymers.

Kirchmeyer teaches subsequently working up the reaction product and purifying the finished polythiophene solution as a possible work-up step for removal of salts with the aid of ion-exchange resins (paragraphs [0040], [0041] and [0048]). That is, Kirchmeyer et al disclose the use of an ion-exchanger for the purification of a reaction product or finished polythiophene solution. Kirchmeyer et al do not teach or suggest anything about a metal salt of an organic acid or an inorganic acid having organic radicals being treated with an ion exchanger to prepare the metal salt as an oxidant. Thus, Kirchmeyer, by contrast, discloses only the use of ion exchanger for the purification of reaction product or finished polymer solution and not for the treatment of the oxidant before the oxidant is mixed with the precursors for the preparation of conductive polymers.

Hsu teaches a product of the polymerization reaction referred to as the poly(dioxythiophene)/poly(acrylamidoalkylsulfonic acid) complex and that the produced

complex is treated with anion and cation exchange resins, which are added to the aqueous dispersion to quench the polymerization and remove metal ions (see col. 3, lines 51-59). Accordingly, Hsu, like Kirchmeyer, by contrast, discloses only the use of ion exchanger for the purification of finished polymer dispersion and not for the treatment of the metal salt of an organic acid or an inorganic acid having organic radicals to prepare the metal salt as an oxidant. Thus, neither Kirchmeyer nor Hsu teaches or suggests that a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger to prepare the metal salt as an oxidant before the metal salt is brought into contact with precursors as an oxidant for the preparation of the conductive polymers as required by the present claims.

Nishiyama does not remedy the deficiencies of Kirchmeyer or Hsu as alleged by the Patent Office. The Patent Office does not allege that Nishiyama teaches that a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger to prepare the metal salt as an oxidant before the metal salt is brought into contact with precursors as an oxidant for the preparation of the conductive polymers as required by the present claims. As cited by the Patent Office, Nishiyama, at best, teaches an oxidizing agent solution may include an oxidant such as iron (III) salt dissolved in a non-protonic organic solvent such as acetonitrile. However, Nishiyama's iron (III) salt dissolved in non-protonic organic solvent does not teach or suggest treating a metal salt of an organic acid or an inorganic acid having organic radicals with an ion exchanger to prepare the metal salt as an oxidant before the metal salt is brought into contact with precursors as an oxidant for the preparation of the conductive polymers.

Thus, Kirchmeyer and Nishiyama or Hsu and Nishiyama, taken singly or in combination, do not teach or suggest that a metal salt of an organic acid or an inorganic acid having organic radicals is treated with an ion exchanger to prepare the metal salt as an oxidant before the metal salt is brought into contact with precursors as an oxidant for the preparation of the conductive polymers as required by the present claims.

Because these features of independent claims 1 and 12-14 are neither taught nor suggested by Kirchmeyer or Hsu in view of Nishiyama, the combinations of these references would not have rendered obvious, the features specifically defined in claims 1 and 12-14 and their dependent claims.

For at least these reasons, claims 1-14 are patentably distinct from and/or non-obvious in view of Kirchmeyer and Nishiyama or Hsu and Nishiyama. Reconsideration and withdrawal of the rejections of the claims under 35 U.S.C. 102(b)/103(a) are respectfully requested.

II. Rejoinder

Applicants respectfully submit that because claims 1-14 are in condition for allowance for the reasons set forth above, claims 15-35 and 38-75 should be rejoined and similarly allowed. Thus, withdrawal of the Restriction/Election Requirement and rejoinder of claims 15-35 and 38-75 are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-35 and 38-75 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to

place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Early and favorable action is earnestly solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If entry and consideration of the amendments above requires an extension of time, Applicants respectfully request that this be considered a petition therefor. The Commissioner is authorized to charge any fee(s) due in this connection to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

Respectfully submitted,

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